

ICS Thermocouples



With connection head	
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TC with replacable measuring insert	230, 231, 261, 272
TC for measuring of temperature in ovens	240, 244, 245A, 247A, 247B
TC for built-in in an existing protective tube	248
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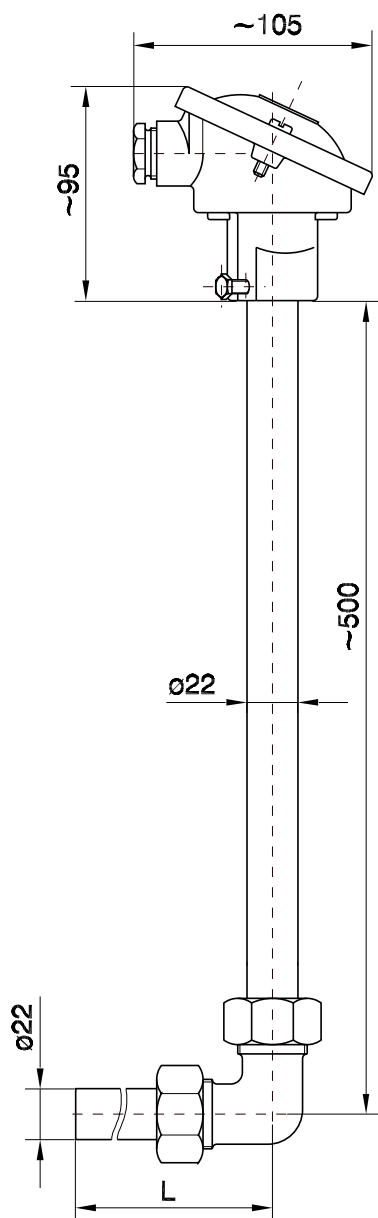
Measuring inserts	
Common measuring insert	260
Sheated measuring insert	285

Special types	
Small thermocouple for screwing in (compact thermometer)	506
Thermocouple with digital display	

Precision thermocouples	
Precision thermocouple	PTE
Fixed point thermocouple	SKTE, SKTE-F, FP-MTE

Cable sensors	
Without attaching parts	K1T, K10T, K12T, FP-KTE
With attaching parts	K4T, K5T, K6T, K7T, K8T, K9T, K11T

Thermocouples with connection head Series 210



Angle Thermocouple for measuring of temperature in ovens and hardness-baths; implementations with flange 22 or with adjustable thread joint 22 are deliverable (→ chapter parts and accessories)

Connection head

Form A according DIN 43 729
on inquiry

Protection classification

IP 43 according DIN 60529

Application temperature

up to +1000 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
S (PtRh10-Pt) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Wire size

0,5 mm (only for TC S)
1 mm
3 mm (only for single design)

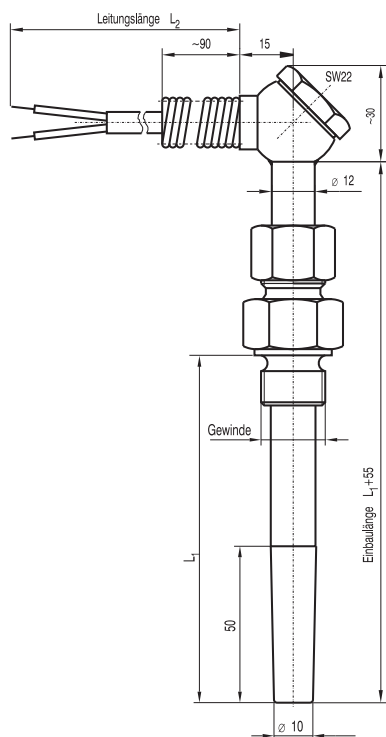
Protective tube material

1.4749
1.4762
1.4841
on inquiry

Nominal length L

500 mm
on inquiry

Thermocouples with compensating cable Series 220



Thermocouple with a fix connected compensating cable and adjustable thread joint; for application in ship building

Construction

Basic implementation

Connection head

ball type head \varnothing 25 of stainless steel

Protection classification

IP 54 according DIN 60529

Application temperature

up to +800 °C

Thermo junction

K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple

Protective tube material

1.4571
on inquiry

Insert length L_1

100 mm
160 mm
200 mm
250 mm
on inquiry

Compensating cable length L_2

1500 mm
on inquiry

Type of compensating cable

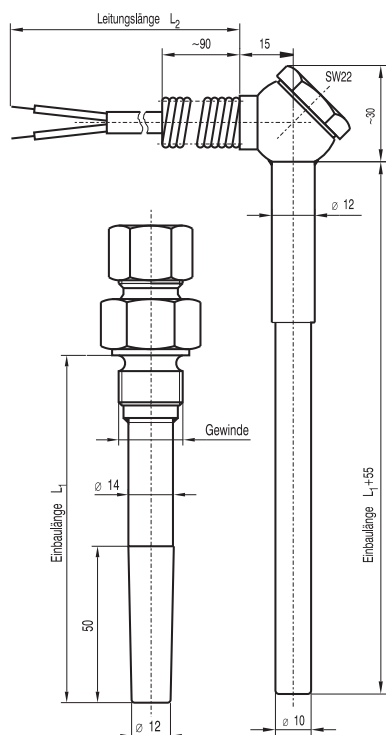
TGIV 2x1,5
on inquiry

Thermocouples
with compensating cable
Series 220

Thread

M18x1,5
M20x1,5
G1/2A
G3/4A

Thermocouples with compensating cable Series 221



Thermocouple with a fix connected compensating cable and additional protective tube with clamp thread joint; for application in ship building

Construction

Basic implementation

Connection head

ball type head \varnothing 25 of stainless steel

Protection classification

IP 54 according DIN 60529

Application temperature

up to +800 °C

Thermo junction

K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple

Protective tube material

1.4571
on inquiry

Insert length L_1

100 mm
160 mm
200 mm
250 mm
on inquiry

Compensating cable length L_2

1500 mm
on inquiry

Type of compensating cable

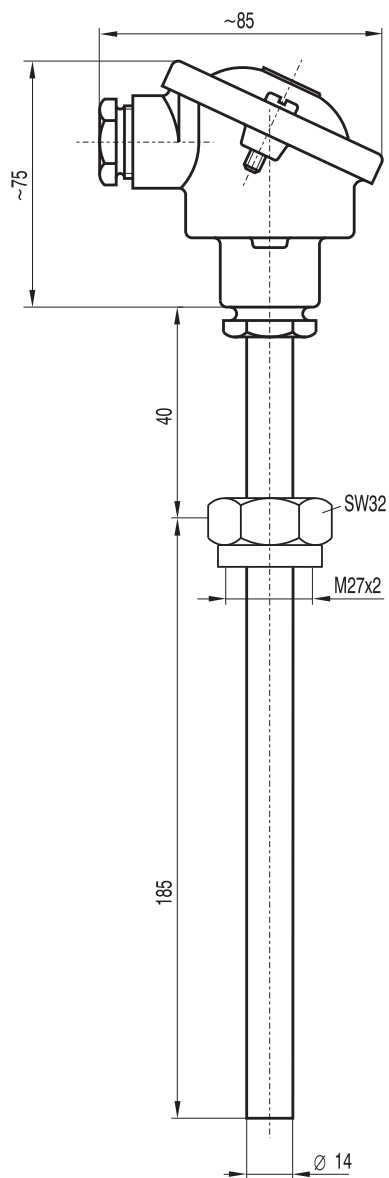
TGIV 2x1,5
on inquiry

Thermocouples
with compensating cable
Series 221

Thread

M20x1,5
M27x2
G1/4A
G3/4A
on inquiry

Thermocouples with connection head Series 230



Thermocouple with exchangeable measuring insert

Construction

Basic implementation

Connection head

Form B according DIN 43 729
on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Wire size

1 mm

Protective tube material

1.4571
on inquiry

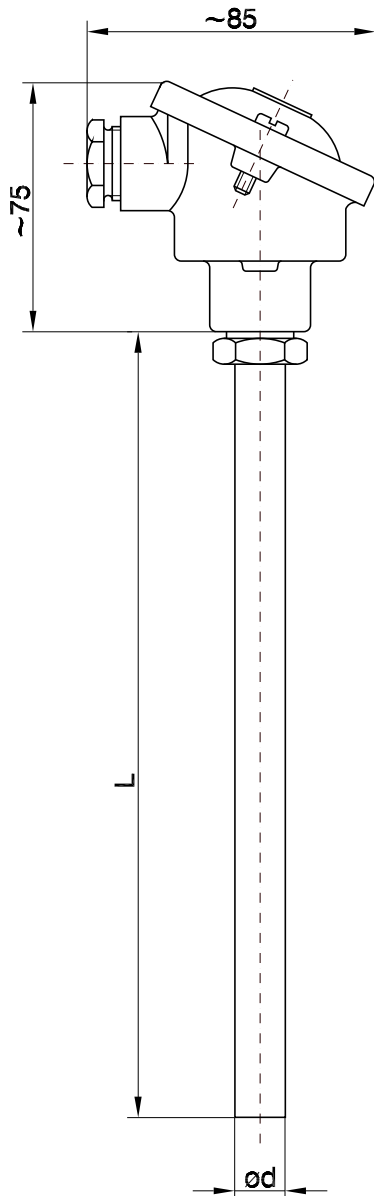
Insert length L_1

on inquiry

Thread

M20x1,5
M27x2
G1/2A
G3/4A
on inquiry

Thermocouples with connection head Series 240



Thermocouple with a metallic protective tube outside, implementations with flange or adjustable thread joint are deliverable (→ chapter parts and accessories)

Construction

Basic implementation
EX-implementation (intrinsically safe)

Connection head

Form B according DIN 43 729
Form BUZ for explosion-proof design according DIN 43 729
on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Protective tube material

1.4571
on inquiry

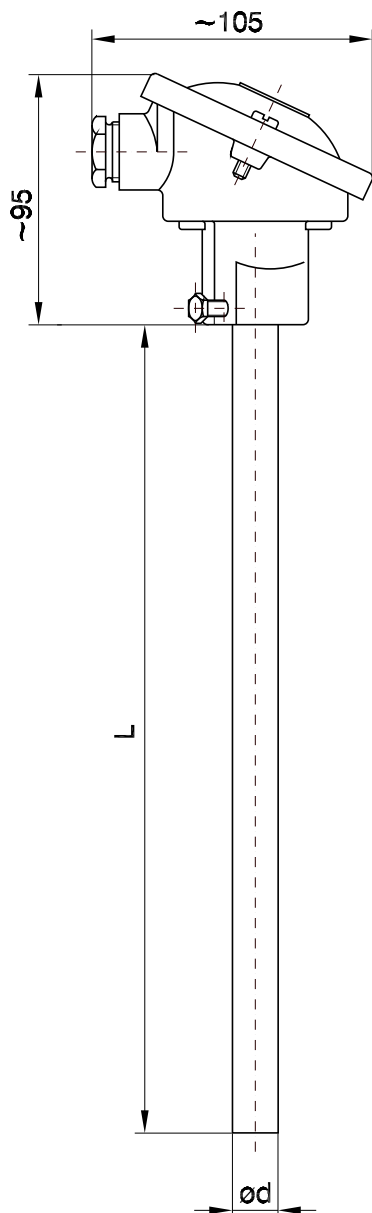
Protective tube diameter d

15 mm
on inquiry

Nominal length L

on inquiry

Thermocouples with connection head Series 244



Thermocouple with metallic protective tube outside and a ceramic inside, implementations with flange or adjustable thread joint are deliverable (→ chapter parts and accessories)

Connection head

Form A according DIN 43 729
on inquiry

Protection classification

IP 43 according DIN 60529

Application temperature

up to +1000 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
S (PtRh10-Pt) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Wire size

0,5 mm (only for TC S)
1 mm
3 mm (only for single design)

Protective tube material

1.4749
1.4762
1.4841
on inquiry

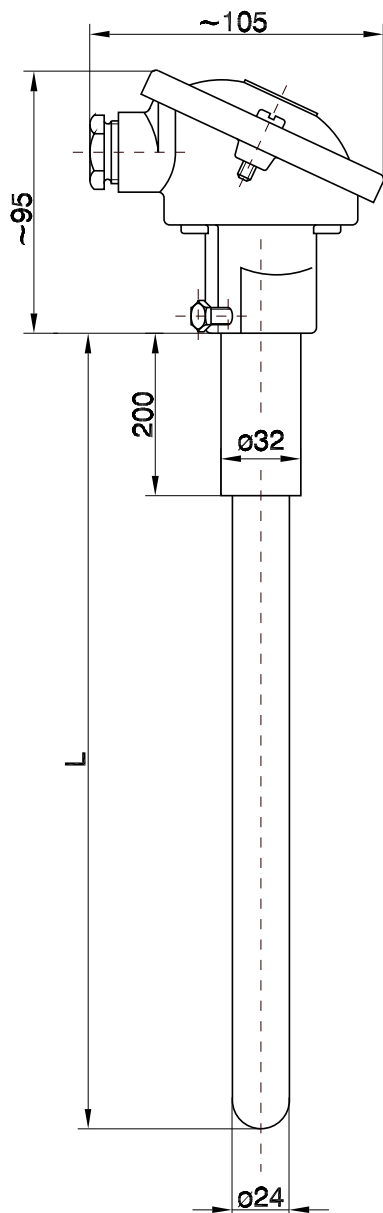
Protective tube diameter d

22 mm
on inquiry

Nominal length L

on inquiry

Thermocouples with connection head Series 245A



Thermocouple with a ceramic protective tube and a holding tube of stainless steel, implementations with flange is deliverable (→ chapter parts and accessories)

Connection head

Form A according DIN 43 729
on inquiry

Protection classification

IP 43 according DIN 60529

Application temperature

up to +1600 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
S (PtRh10-Pt) DIN EN 60584
B (PtRh30-PtRh6) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Wire size

0,5 mm (only for TC S and B)
1 mm
3 mm (only for single design)

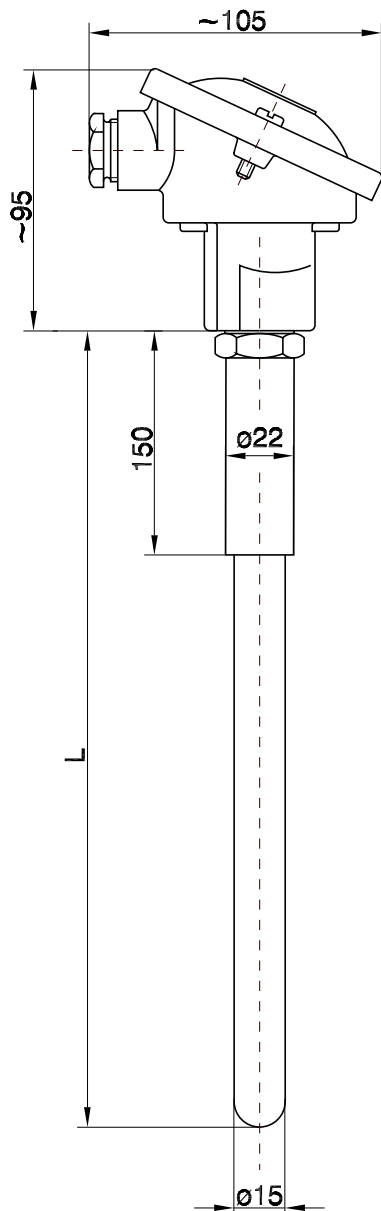
Protective tube material

C 610
C 799
on inquiry

Nominal length L

on inquiry max. 2000 mm

Thermocouples with connection head Series 247A



Thermocouple with a ceramic protective tube and a holding tube of stainless steel, implementations with flange or adjustable thread joint are deliverable (→ chapter parts and accessories)

Connection head

Form A according DIN 43 729
on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

up to +1600 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
S (PtRh10-Pt) DIN EN 60584
B (PtRh30-PtRh6) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Wire size

0,5 mm (only for TC S and B)
1 mm

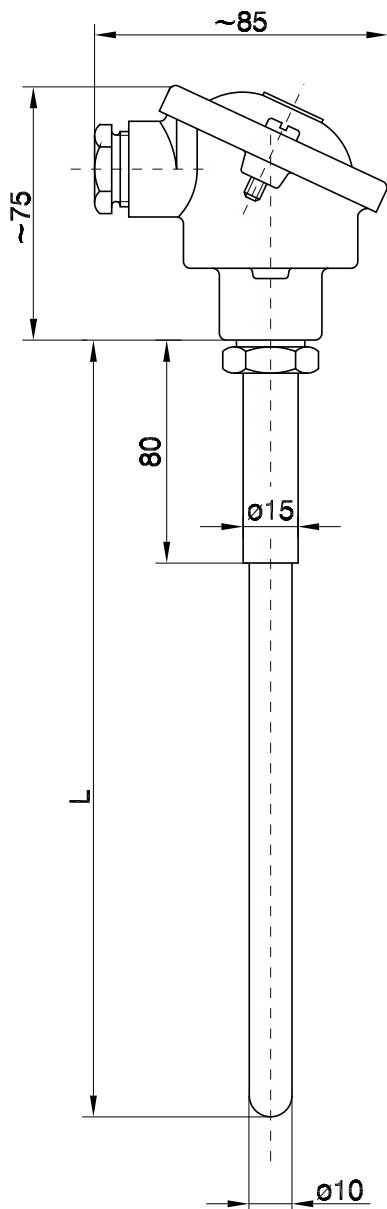
Protective tube material

C 610
C 799
on inquiry

Nominal length L

on inquiry max. 2000 mm

Thermocouples with connection head Series 247B



Thermocouple with a ceramic protective tube and a holding tube of stainless steel, implementations with flange or adjustable thread joint are deliverable (→ chapter parts and accessories)

Connection head

Form B according DIN 43 729
on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

up to +1600 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
S (PtRh10-Pt) DIN EN 60584
B (PtRh30-PtRh6) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Wire size

0,35 mm (TC S)
0,5 mm (only for TC S and B)
1 mm

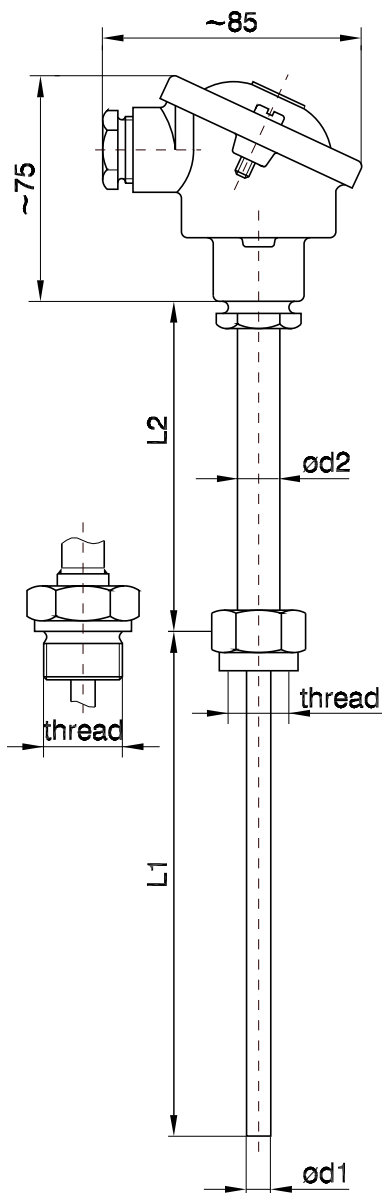
Protective tube material

C 610
C 799
on inquiry

Nominal length L

on inquiry max. 1000 mm

Thermocouples with connection head Series 248



Thermocouple with exchangeable measuring insert, only for combination with already built-in protection tubes on measuring place (otherwise no insulation between process-connection and interior connection head), for middle and high operating pressures Attention: with directly built-in (without additional protective tube) can become the measuring insert in the extension tube soldered or welded (insulation between process-connection and interior connection head, measuring insert not replaceable) - with order declares!

Construction

Basic implementation
EX-implementation (intrinsically safe / build in protective tube necessary)

Connection head

Form B according DIN 43 729
Form BUZ for explosion-proof design according DIN 43 729 on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Wire size

1 mm

Protective tube material

1.4571
on inquiry

Thermocouples
with connection head
Series 248

Measuring insert diameter d1/ Extension tube diameter d2

6/9
6/11
8/12
on inquiry

Insert length L₁

on inquiry

extension tube length L₂

130 mm
on inquiry

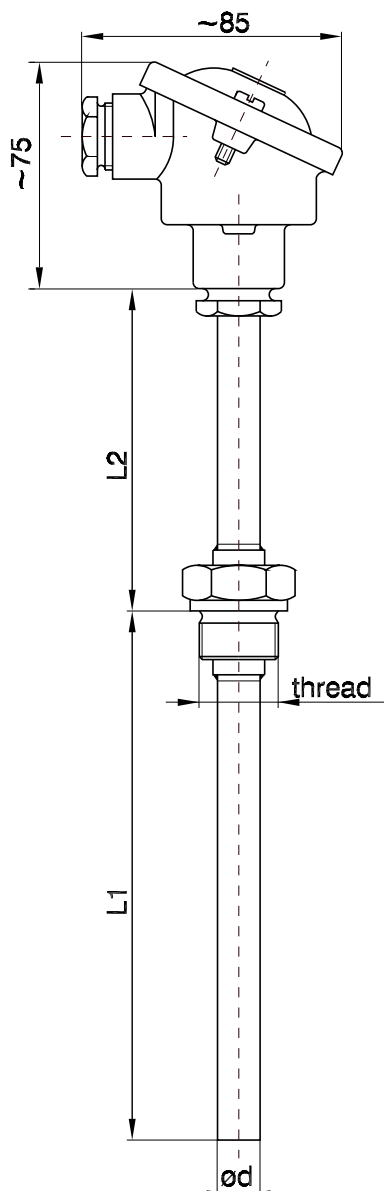
Process connection

outside thread
cup nut

Thread

M18x1,5
M20x1,5
M27x2
G1/2
G3/4
on inquiry

Thermocouples with connection head Series 254



Thermocouple with exchangeable measuring insert

Construction

Basic implementation
Ex-implementation (intrinsically safe)

Connection head

Form B according DIN 43 729
Form BUZ for explosion-proof design according DIN 43 729
on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Wire size

1 mm

Protective tube material

1.4571

Protective tube diameter d

11 mm
on inquiry

Insert length L₁

on inquiry

extension tube length L₂

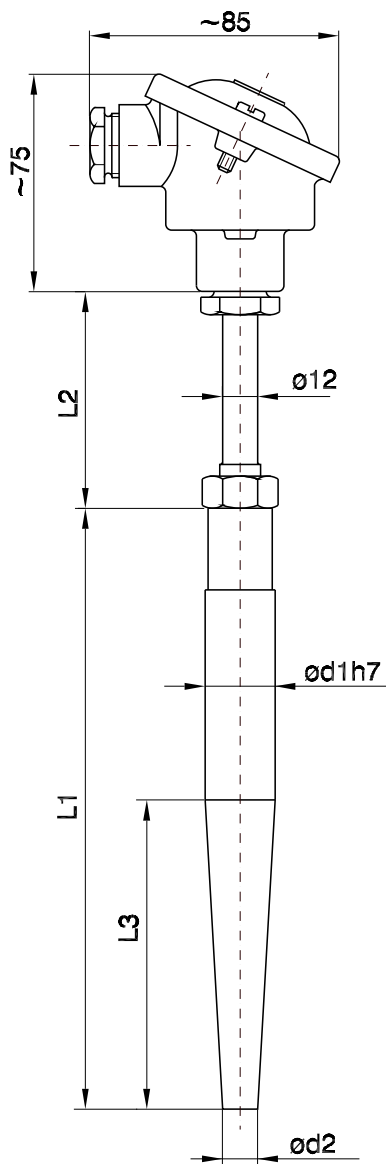
130 mm
on inquiry

Thermocouples
with connection head
Series 254

Thread

M20x1,5
M27x2
G1/2A
G3/4A
on inquiry

Thermocouples with connection head Series 257



Thermocouple with exchangeable sheathed measuring insert and protective tube for welding in

Construction

Basic implementation
Ex-implementation (intrinsically safe)

Connection head

Form B according DIN 43 729
Form BUZ for explosion-proof design according DIN 43 729
on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Protective tube material

1.0460 (C22.8)
1.4571
on inquiry

Protective tube Form 4 for welding in according DIN 43 772

Form; L1; L3; ø d1; ø d2; measuring insert-ø ; thread

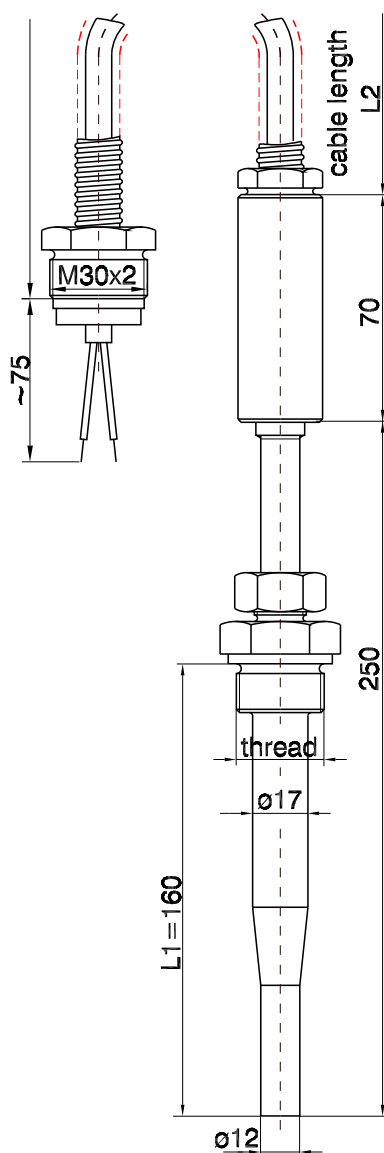
D1; 140; 65; 24; 12,5; 6; M18x1,5
D2; 200; 125; 24; 12,5; 6; M18x1,5
D4; 200; 65; 24; 12,5; 6; M18x1,5
D4S*; 140; 65; 18; 9; 3; M14x1,5
D5; 260; 125; 24; 12,5; 6; M18x1,5
on inquiry

Thermocouples
with connection head
Series 257

extension tube length L₂

130 mm
on inquiry

Thermocouples with compensating cable Series 258



Thermocouple with compensating cable and additional protective tube with clamp thread joint;
for application in ship building

Construction

Basic implementation

Protection classification

IP 68 according DIN 60529

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

on inquiry

Protective tube material

1.4571

on inquiry

Insert length L_1

160 mm

on inquiry

Compensating cable length L_2

1500 mm

on inquiry

Type of compensating cable

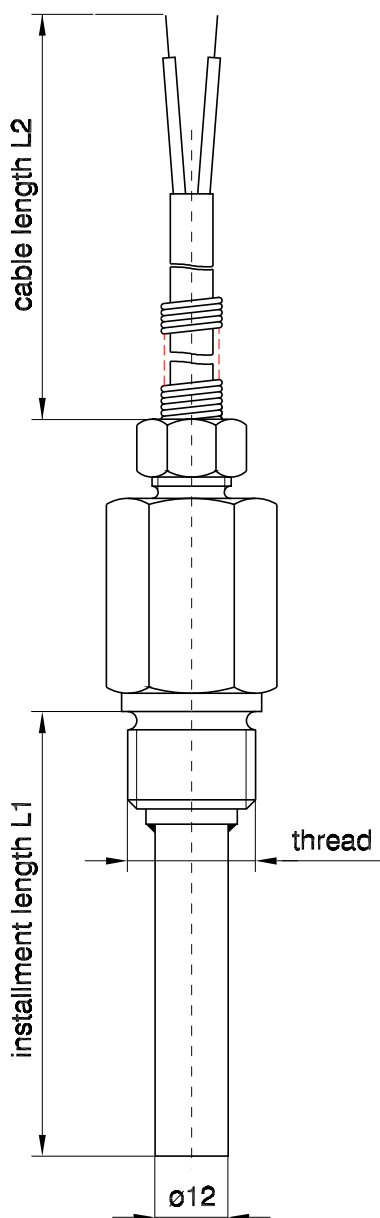
SISI 2x1,5

Thread

M27x2

on inquiry

Thermocouples with compensating cable Series 259



Thermocouple with exchangeable sheathed-measuring insert;
for application in ship building

Construction

Basic implementation

Protection classification

IP 54 according DIN 60529

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

on inquiry

Sheathed measuring inset diameter

6 mm

Protective tube material

1.4571

on inquiry

Insert length L_1

on inquiry

Compensating cable length L_2

1500 mm

on inquiry

Type of compensating cable

TGIV 2x1,5

on inquiry

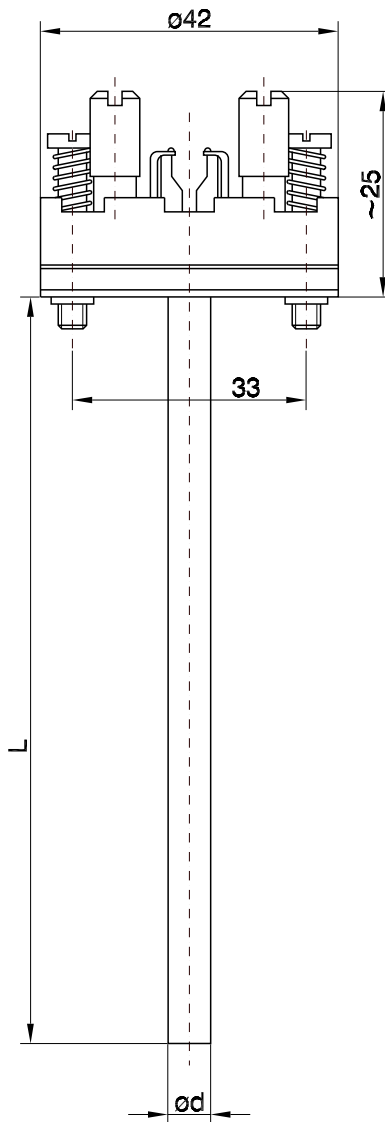
Thread

M20x1,5

G1/2A

on inquiry

Thermocouples Measuring insert Series 260



Application temperature

up to +800 °C
on inquiry

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Protective tube material

1.4571
on inquiry

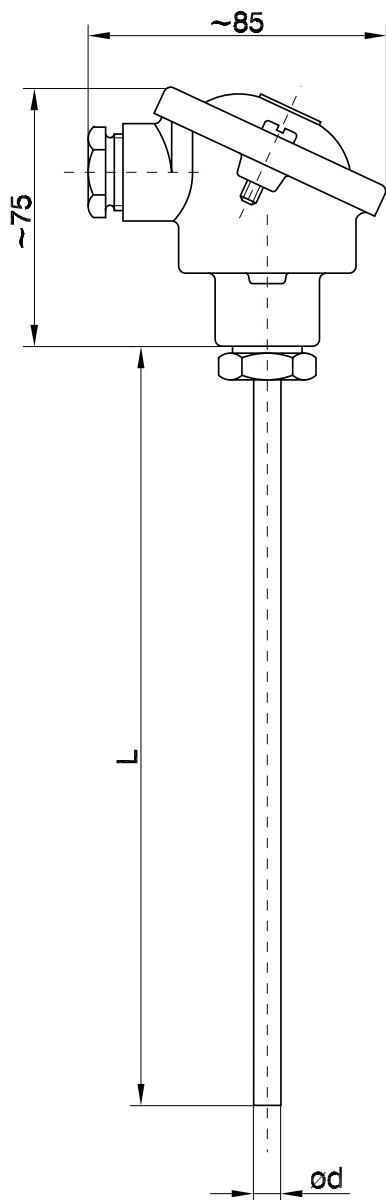
Measuring insert diameter d

6 mm
8 mm
on inquiry

Nominal length L

on inquiry

Thermocouples with connection head Series 261



Measuring insert with connection head

Construction

Basic implementation
Ex-implementation (intrinsically safe)

Connection head

Form B according DIN 43 729
Form BUZ for explosion-proof design according DIN 43 729
on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

up to +800 °C
on inquiry

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Protective tube material

1.4571
on inquiry

Measuring insert diameter d

6 mm
8 mm
on inquiry

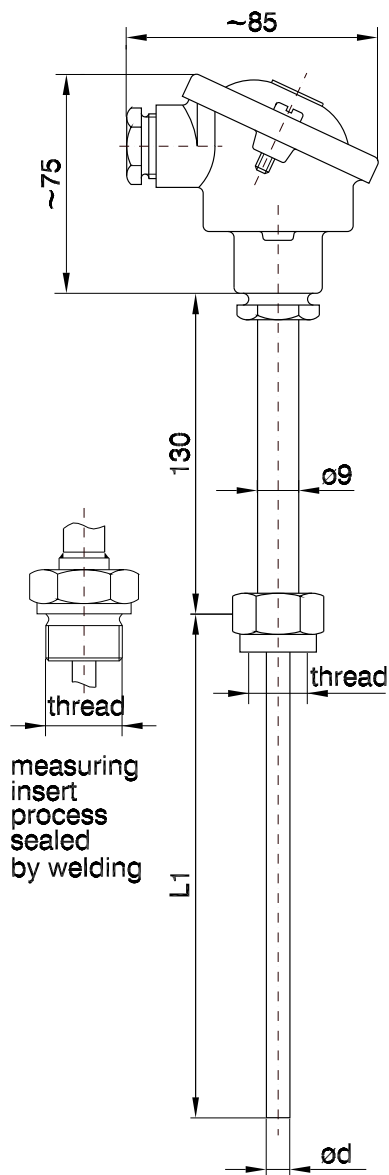
Nominal length L

on inquiry

Thermocouples

Sheathed Thermocouple

Series 270



Sheathed Thermocouple for screwing;
measuring insert process sealed by welding
Bending radius of the sheath material $\geq 5x\varnothing d$

Construction

Basic implementation
Ex-implementation (intrinsically safe)

Connection head

Form B according DIN 43 729
Form BUZ for explosion-proof design according DIN 43 729
on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

-200 to +1000°C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Sheath diameter

1,5 mm
2,0 mm
3,0 mm
4,5 mm
6,0 mm
on inquiry

Sheath material

1.4541
1.4571
1.4841
on inquiry

Thermocouples

Sheathed Thermocouple

Series 270

Measuring point design

insulated of sheath
welded in sheath
disconnected bead at 2 thermocouples
connected bead at 2 thermocouples

Insert length L₁

on inquiry

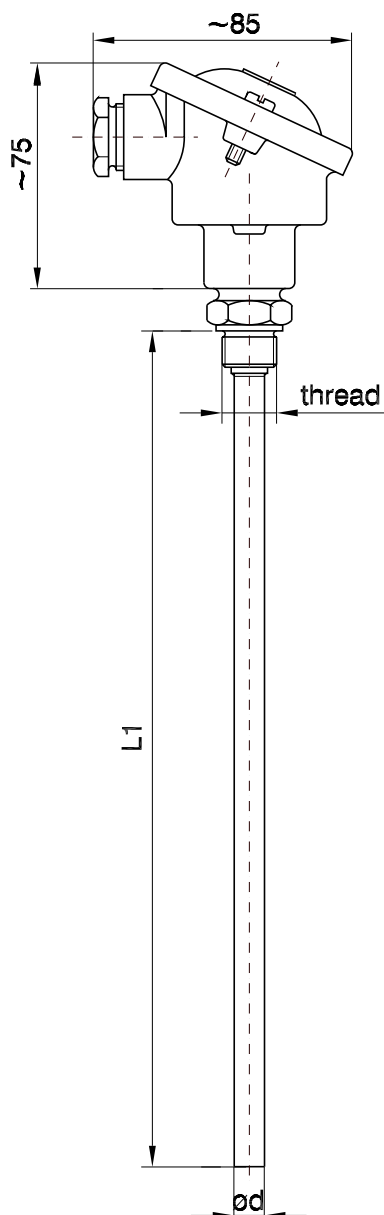
Process connection

outside thread
cup nut

Thread

M20x1,5
G1/2A
on inquiry

Thermocouples with connection head Series 272



Thermocouple for screwing in with exchangeable measuring insert

Connection head

Form B according DIN 43 729
on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Protective tube material

1.4571
on inquiry

Protective tube diameter d

9 mm
on inquiry

Insert length L_1

on inquiry

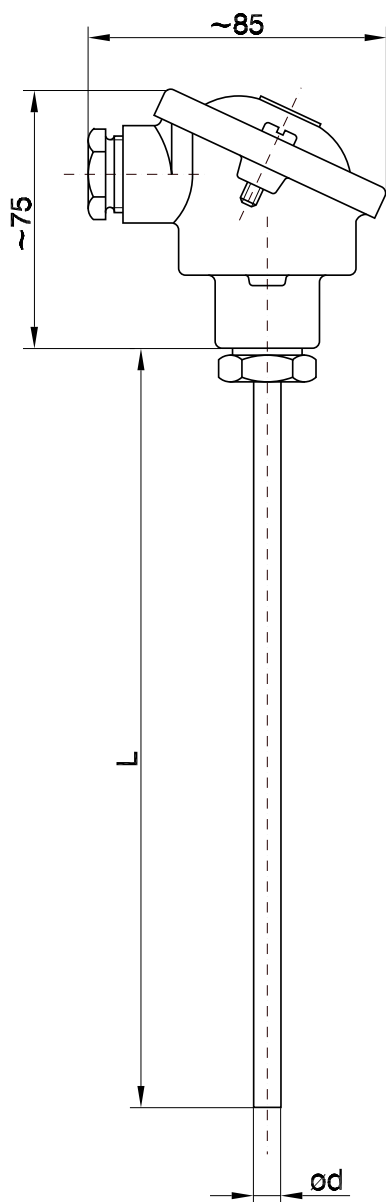
Thread

M20x1,5
G1/2A
on inquiry

Thermocouples

Sheathed Thermocouple

Series 273



Sheathed Thermocouple measuring insert with connecting head
Bending radius of the sheath material $\geq 5x\varnothing d$

Construction

Basic implementation
Ex-implementation (intrinsically safe)

Connection head

Form B according DIN 43 729
Form BUZ for explosion-proof design according DIN 43 729
Form F (→ accessories)
on inquiry

Protection classification

IP 54 according DIN 60529

Application temperature

-200 to +1000°C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Sheath diameter

1,5 mm
2,0 mm
3,0 mm
4,5 mm
6,0 mm
on inquiry

Sheath material

1.4541
1.4571
1.4841
2.4816
on inquiry

Thermocouples
Sheathed Thermocouple
Series 273

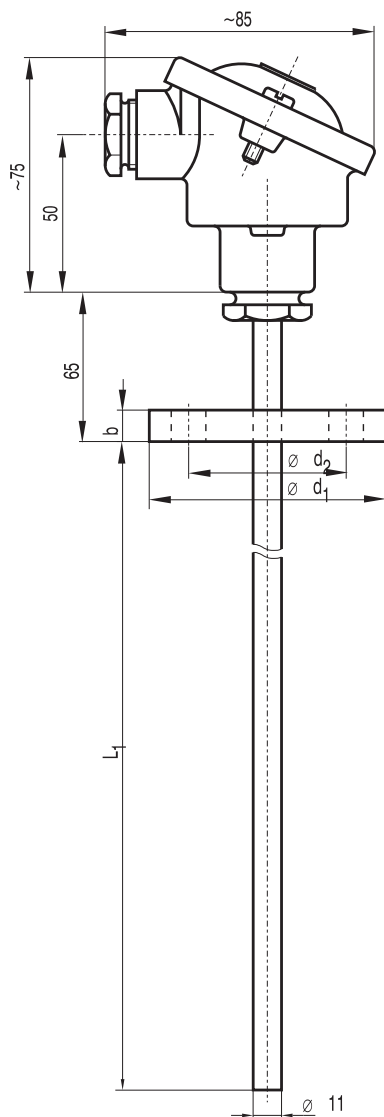
Measuring point design

insulated of sheath
welded in sheath
disconnected bead at 2 thermocouples
connected bead at 2 thermocouples

Nominal length L

on inquiry

Thermocouples with connection head Series 274



Thermocouple with flange and replaceable measuring insert

Construction

Basic implementation
Ex-implementation (intrinsically safe)

Connection head

Form B according DIN 43 729
Form BUZ for explosion-proof design according DIN 43 729
on inquiry

Protection classification

IP 54 according DIN 60529
on inquiry

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Flange

flange design, flange dimensions as soon as flange material
on inquiry

Wire size

1 mm

Protective tube material

1.4571
on inquiry

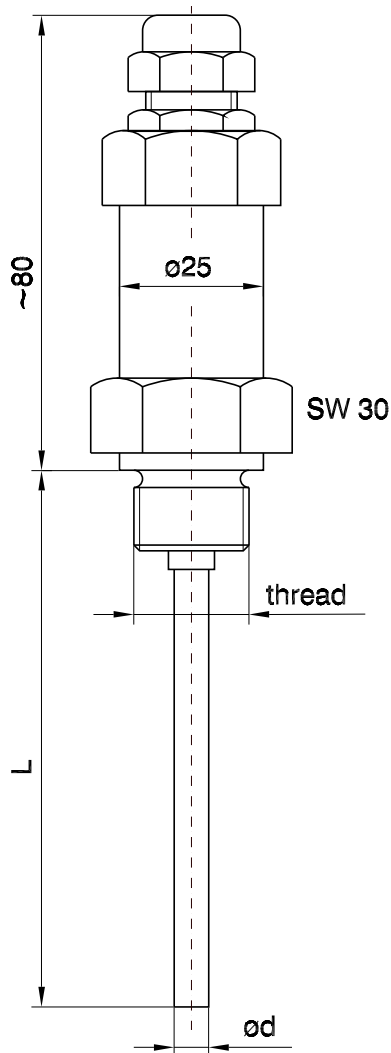
Insert length L_1

on inquiry

Thermocouples

Sheathed Thermocouple

Series 280



Sheathed Thermocouple with a little cylindrical connection head for screwing in; process sealed welded in
Bending radius of the sheath material $\geq 5x\varnothing d$

Protection classification

IP 68 according DIN 60529

Application temperature

-200 to +1000 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

Sheath diameter

1.5 mm

2.0 mm

3.0 mm

4.5 mm

6.0 mm

on inquiry

Sheath material

1.4541

1.4571

1.4841

on inquiry

Measuring point design

insulated of sheath

welded in sheath

Insert length L_1

on inquiry

Thread

M20x1,5

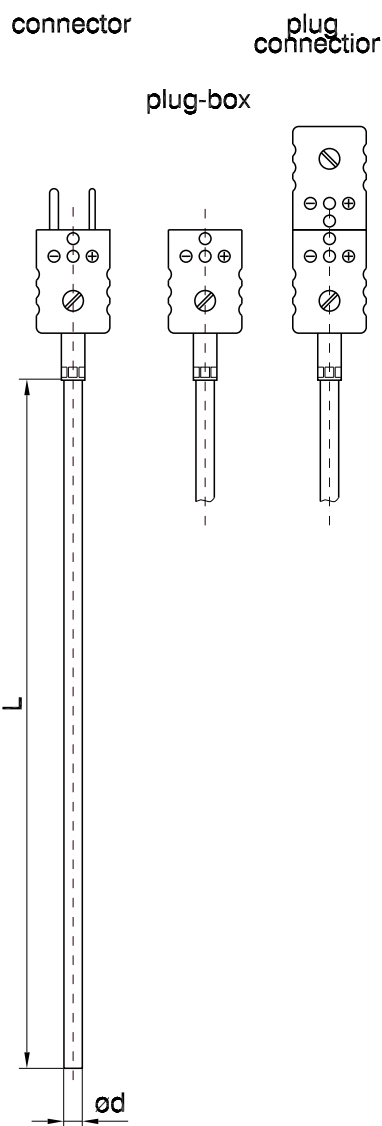
G1/2A

on inquiry

Thermocouples

Sheathed Thermocouple

Series 282



Sheathed Thermocouple with connector
Bending radius of the sheath material $\geq 5x\varnothing d$

Connector

Standard thermocouple plug (male)
Standard thermocouple plug box (female)
Standard thermocouple plug connection
Miniature thermocouple plug (male)
Miniature thermocouple plug box (female)
Miniature thermocouple plug connection
on inquiry

Protection classification

suitable used connector

Application temperature

-200 to +1000°C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
on inquiry

Sheath diameter

1,5 mm
2,0 mm
3,0 mm
4,5 mm
6,0 mm
on inquiry

Sheath material

1.4541
1.4571
1.4841
2.4816
on inquiry

Thermocouples
Sheathed Thermocouple
Series 282

Measuring point design

insulated of sheath
welded in sheath

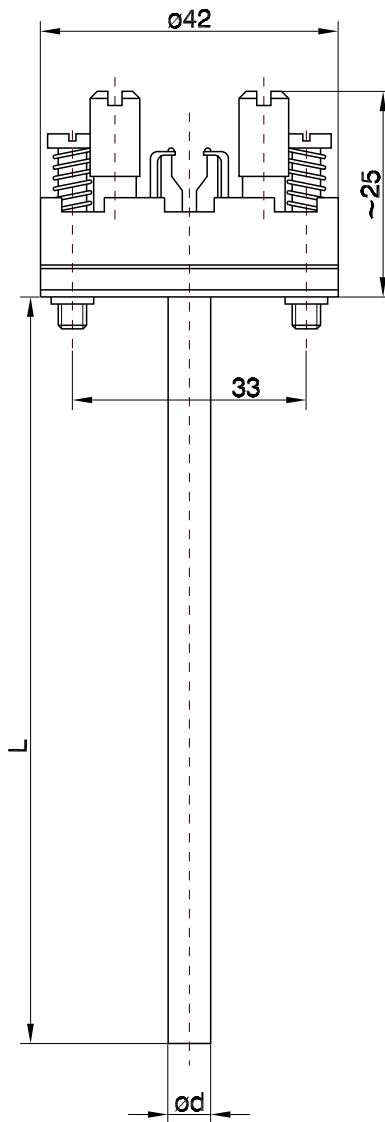
Nominal length L

on inquiry

Thermocouples

Sheathed thermocouple measuring inserts

Series 285



Bending radius of the sheath material $\geq 5 \times \varnothing d$

Application temperature

-200 to +1000 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Sheath diameter

1,5 mm
2,0 mm
3,0 mm
4,5 mm
6,0 mm
on inquiry

Sheath material

1.4541
1.4571
1.4841
2.4816
on inquiry

Measuring point design

insulated of sheath
welded in sheath
disconnected bead at 2 thermocouples
connected bead at 2 thermocouples

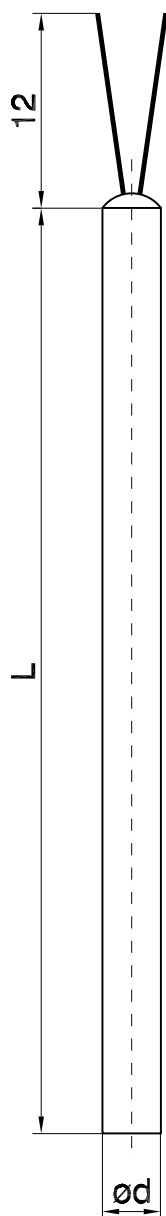
Nominal length L

on inquiry

Thermocouples

Sheathed Thermocouple

Series 288



Sheathed Thermocouple for the universal application
Bending radius of the sheath material $\geq 5x\varnothing d$

Application temperature

-200 to +1000°C

Thermo junction

J (Fe-CuNi) DIN EN 60584
 K (NiCr-Ni) DIN EN 60584
 on inquiry

Number of Thermo junction

1 thermocouple
 2 thermocouples

Sheath diameter

1,5 mm
 2,0 mm
 3,0 mm
 4,5 mm
 6,0 mm
 on inquiry

Sheath material

1.4541
 1.4571
 1.4841
 2.4816
 on inquiry

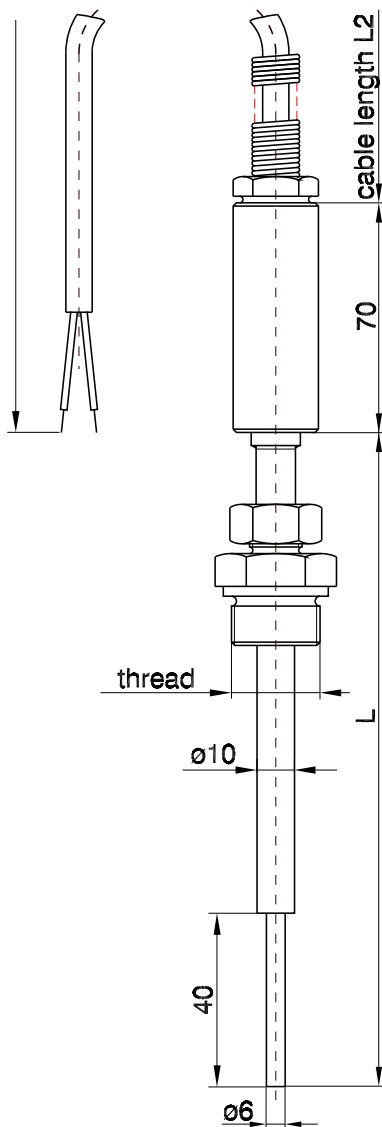
Measuring point design

insulated of sheath
 welded in sheath
 disconnected bead at 2 thermocouples
 connected bead at 2 thermocouples

Nominal length L

on inquiry

Thermocouples Sheathed Thermocouple Series 290



Special-thermometer for the application in the ship building, privileged suitable for measuring the exhaust-gas-temperature on the ship diesel engine, with adjustable cutting ring thread joint
Bending radius of the sheath material $\geq 5x\varnothing d$

Construction

Basic implementation

Protection classification

IP 68 according DIN 60529

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

2 thermocouples

Sheath material

1.4541

1.4571

on inquiry

Measuring point design

insulated of sheath

welded in sheath

disconnected bead at 2 thermocouples

connected bead at 2 thermocouples

Nominal length L

140 mm

on inquiry

Compensating cable length L₂

1500 mm

on inquiry

Type of compensating cable

on inquiry

Thermocouples
Sheathed Thermocouple
Series 290

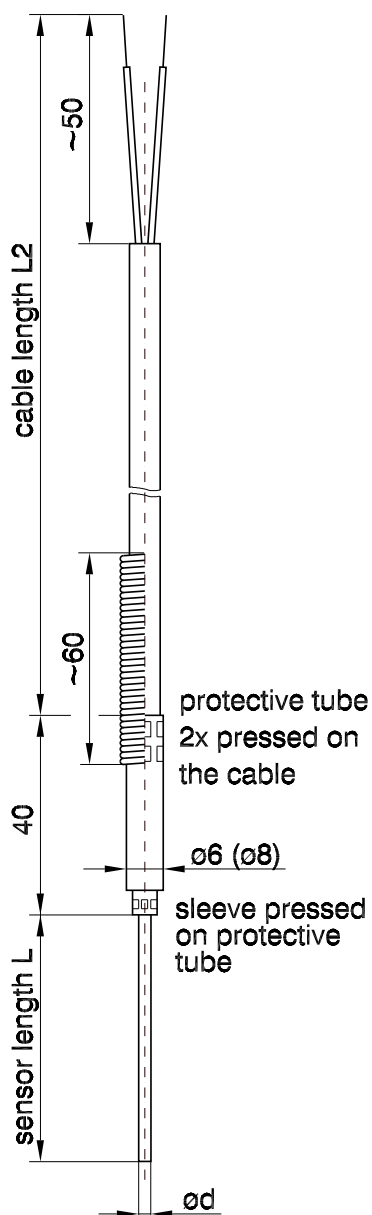
Thread

M18x1,5
on inquiry

Thermocouples

Sheathed Thermocouple

Series 294



Sheathed Thermocouple with connecting sleeve and thermo-compensating-lead

Bending radius of the sheath material $\geq 5x\varnothing d$

Application temperature

-200 to +1000°C

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

2 thermocouples

Sheath diameter

0.5 mm

1,0 mm

1.5 mm

2,0 mm

3,0 mm

4,5 mm

6,0 mm

on inquiry

Sheath material

1.4541

1.4571

1.4841

2.4816

on inquiry

Measuring point design

insulated of sheath

welded in sheath

disconnected bead at 2 thermocouples

connected bead at 2 thermocouples

Sensor length L

on inquiry min 10 mm

Compensating cable length L₂

on inquiry

Thermocouples
Sheathed Thermocouple
Series 294

Type of compensating cable

on inquiry

Bend protection

without
with spiral spring

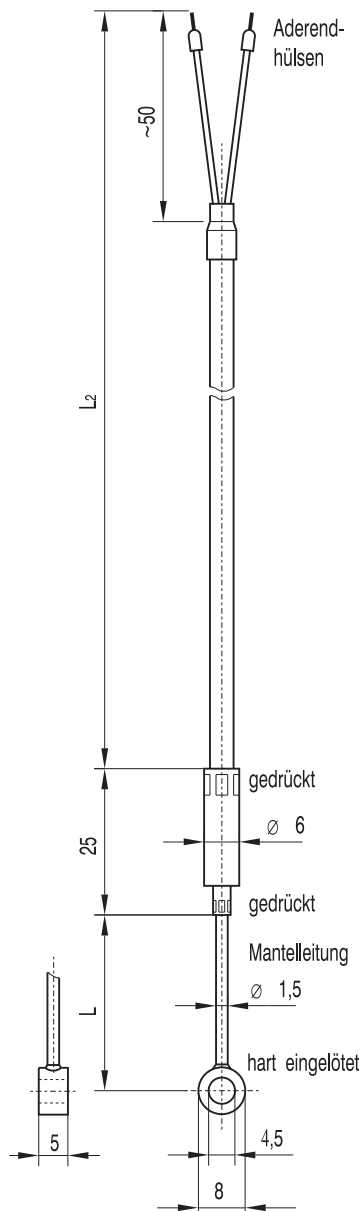
Connector

free ends
connector on inquiry

Thermocouples

Sheathed Thermocouple

Series 500



Sheathed Thermocouple-Cable Sensor with stainless steel ring and thermo braided wire

Application temperature

up to +800 °C

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
on inquiry

Sheath material

1.4571
on inquiry

Material of the ring

Brass
on inquiry

Measuring point design

insulated of sheath
welded in sheath

Nominal length L

500 mm
on inquiry

Compensating cable length L₂

on inquiry

Type of compensating cable

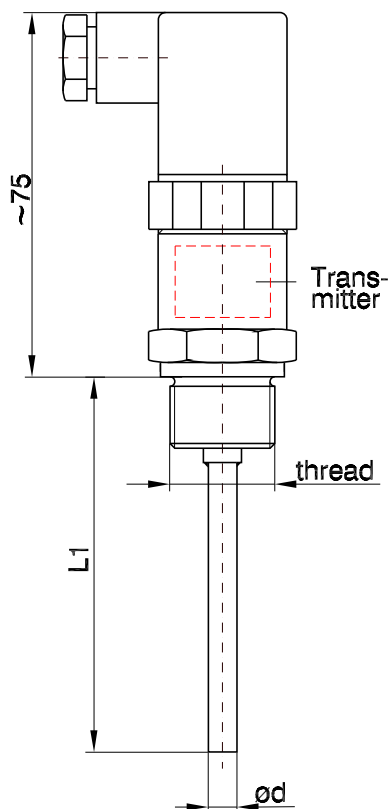
GIGIV 2x0,22
on inquiry

Bending radius of the sheath material $\geq 5x\varnothing d$

Thermocouples

Thermocouple with connector

Series 506



Small thermocouple for screwing in with connectors and built-in transmitter

output signal 4...20mA, measuring range on inquiry

Connection head

connector GSP/GDM

Protection classification

IP 65 according DIN 60529

Application temperature

to +200°C (max. 85°C on transmitter)

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

Protective tube material

1.4571

on inquiry

Protective tube diameter d

6 mm

on inquiry

Insert length L_1

on inquiry

Thread

G1/2A

on inquiry

Output

4 ... 20mA

Loop voltage

10...35VDC, reverse protection

Linearity error

<1% FS*

Thermocouples
Thermocouple with connector
Series 506

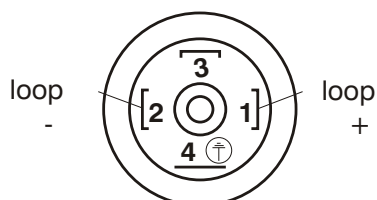
Operating temperature of transformer

-40 °C ... +85 °C

*FS - Temperature scale of transmitter

Thermocouples
Thermocouple with connector
Series 506

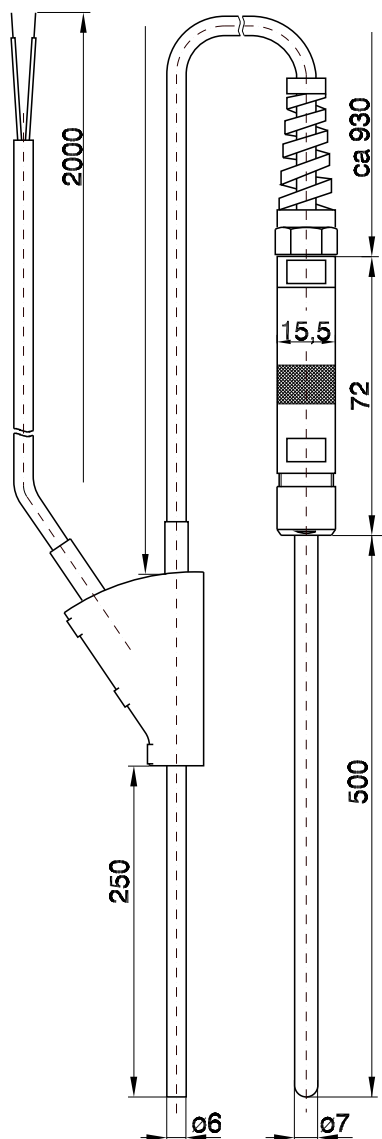
Circuit



Thermocouples

Precision thermocouple

Series PTE



Application areas

- secondary level or transfer thermometer
- highly precise measurements in a large temperature range
- 0...1600 °C (type R,S)
- 400...1700 °C (type B)
- 0...1000 °C (type Au-Pt)
- 0...1300 °C (type Pt-Pd)

Technical datas

- Precious metal wires of high homogeneity and purity, 99.99% typical, on demand with improved reproducibility by means of a special thermal treatment
- protecting tube, alumina C799, one additional as spare, very easy replaceable, \varnothing 7...8x700m, other geometry on demand
- handle \varnothing 20 x 95mm, Ni-plated brass, max. temperature 80 °C
- save transport and storing in smart attached box
- total mass (incl. box) about 2,7 kg

Thermo junction

S (PtRh10-Pt) DIN EN 60584
 R (PtRh13-Pt) DIN EN 60584
 B (PtRh30-PtRh6) DIN EN 60584
 Au-Pt DIN EN 62460
 Pt-Pd DIN EN 62460

Number of Thermo junction

1 thermocouple

Wire size

0,35 mm
 0.5 mm

Protective tube material

C 799

Protective tube diameter d

7 mm
 8 mm
 on inquiry

Thermocouples
Precision thermocouple
Series PTE

Protective tube length L

700 mm
on inquiry

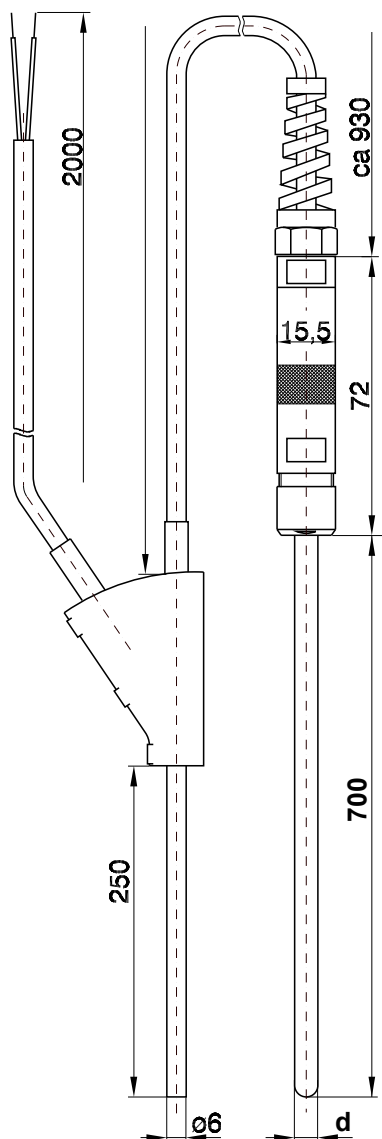
Connector

free ends
others on inquiry

Thermocouples

Fixed point thermocouple

Series SKTE



Application areas

- high precision thermometry from 200 up to 1600 °C
- in- situ recalibration at user specified fixed-point temperatures
- long-term measurements in dangerous or difficult access areas
- self calibration by means of special software
- recognition and correction of most of the systematic errors occurring along the entire thermocouple measuring circuit
- protective tube is removable for exchange of miniature fixed points cells (to be performed by trained persons in clean, dust free environment only)

Application temperature

applicable to max. 200 K above particular fixing point temperature

Thermo junction

S (PtRh10-Pt) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple

Comparison place of point of ice

∅ 6 x 250

Fixed point cell

minicell with specific pure metal on inquiry

Protective tube material

C 799

Protective tube diameter d

7,5 mm

Protective tube length L

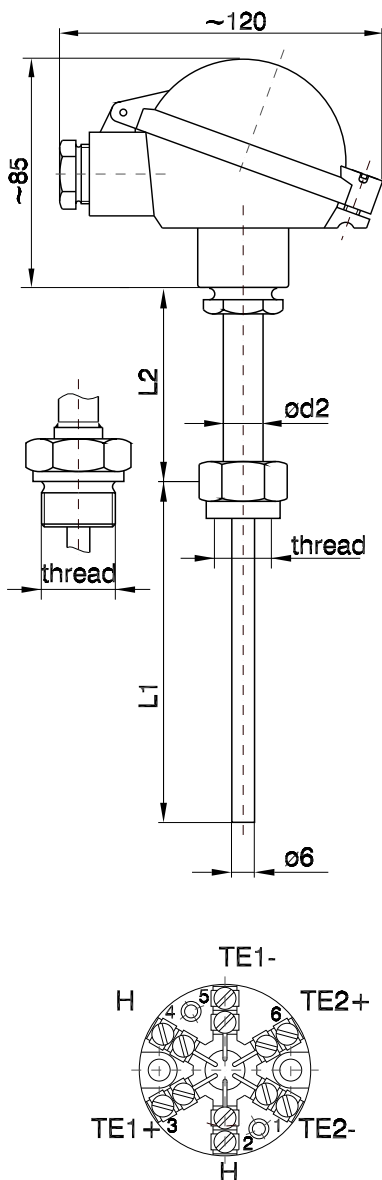
700 mm

- passing the phase change transition point causes a duration signal (melting or freezing plateau, → figure below), which supply reproducible calibration points.
- reproducibility depends on dynamic of environmental temperature field (recommended heating or cooling rate: $|dT/dt| < 1K/min$)

Thermocouples

Fixed point thermocouple

Series SKTE-F



Application:

High precision temperature measurements at defined process temperatures by means of fixed-point calibration (self-calibrating thermocouple) e. g. superheated steam 400 °C to 650 °C

Construction:

- Measuring insert 6mm with
- 1 fixed-point thermocouple (TE1)
 - 1 additional thermocouple (TE2)
 - 1 miniature fixed point cell
 - 1 miniature heating element (ca. 20W)

Connection head

Form BUS according DIN 43 729

Protection classification

IP 65 according DIN 60529

Thermo junction

N (NiCrSi-NiAl) DIN EN 60584
on inquiry

Number of Thermo junction

2 thermocouples

Fixed point cell

minicell with specific pure metal on inquiry

Fixed point material

on inquiry dependent on application temperature

Protective tube material

1.4571
on inquiry

Insert length L_1

on inquiry from 100mm

extension tube length L_2

on inquiry from 130 mm

Process connection

outside thread
cup nut

Thermocouples
Fixed point thermocouple
Series SKTE-F

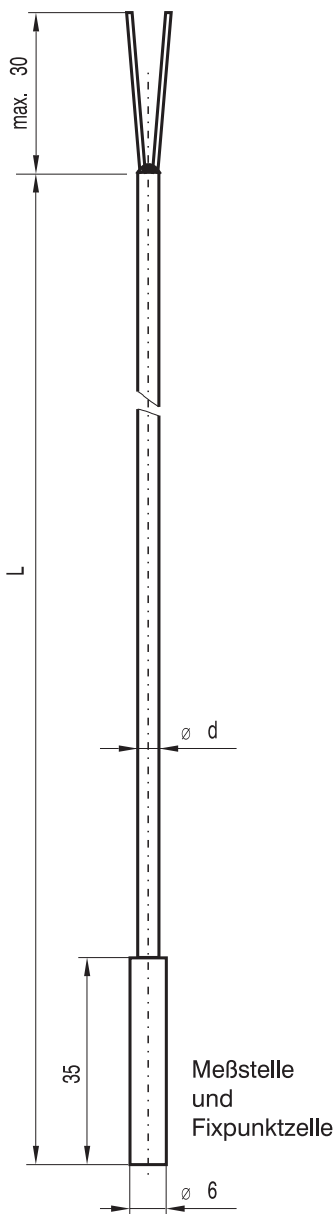
Thread

M18x1,5
M20x1,5
M27x2
G1/2
G3/4
on inquiry

Thermocouples

Fixed point thermocouple

Series FP-MTE



Application

Sheathed Thermocouple with high stability fixed-point cell; the fixed-point substance forces a typical signal during its melting and freezing (fixed-point plateau); calibration curve deviations of the whole measuring circuit will be recognisable and could be corrected implementations with solid or adjustable thread joint are deliverable (→ chapter parts and accessories)

Bending radius of the sheath material $\geq 5x\varnothing d$

Thermo junction

L (Fe-CuNi) DIN 43 710
 J (Fe-CuNi) DIN EN 60584
 K (NiCr-Ni) DIN EN 60584
 N (NiCrSi-NiAl) DIN EN 60584
 S (PtRh10-Pt) DIN EN 60584
 B (PtRh30-PtRh6) DIN EN 60584
 on inquiry

Number of Thermo junction

1 thermocouple

Fixed point material

Bi33In67 72,5 °C
 In 156,59 °C
 Sn 231,93 °C
 Zn 419,53 °C
 Al67Cu33 548,2 °C
 Al87Si13 578,8 °C
 Al 660,32 °C
 Ag28Cu72 779,6 °C
 on inquiry dependent on application temperature

Sheath diameter

1,5 mm
 2,0 mm
 3,0 mm

Sheath material

1.4541
 1.4571
 1.4841
 2.4816

Thermocouples
Fixed point thermocouple
Series FP-MTE

Measuring point design

insulated, integrated in fixed point cell

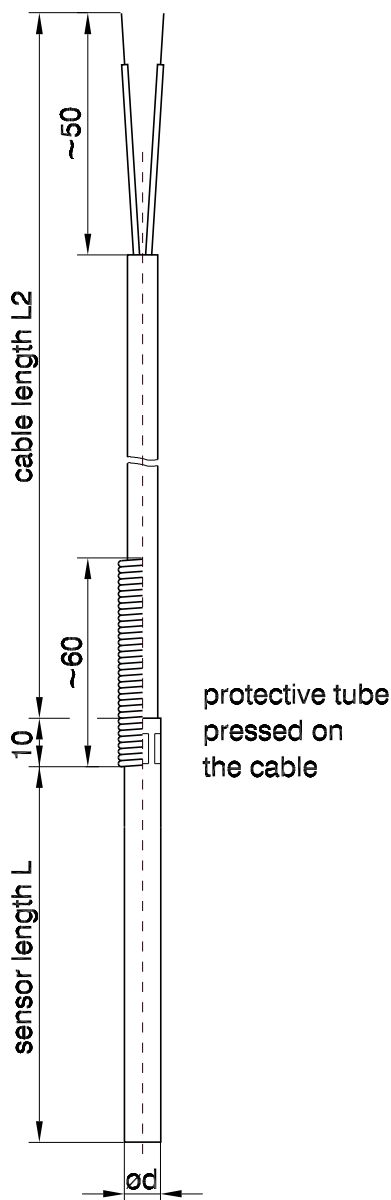
Nominal length L

on inquiry

Thermocouples

Cable sensors

Series K1T



Application temperature

on inquiry, dependent on sensor and protective tube material

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

2 thermocouples

Protective tube material

1.4571

Protective tube diameter d

on inquiry 3 ... 10 mm

Sensor length L

on inquiry 30 ... 1000 mm

Type of compensating cable

on inquiry

Cable length L₂

on inquiry min. 100 mm

Bend protection

without

with spiral spring

Connector

free ends

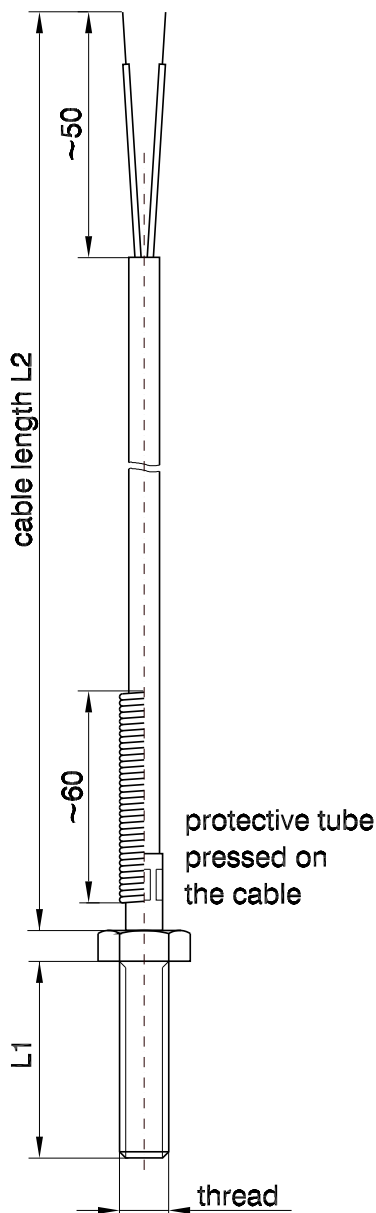
connector on inquiry

declare desired temperature range for case of application

Thermocouples

Cable sensors

Series K4T



Application temperature

on inquiry, dependent on sensor and protective tube material

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

2 thermocouples

Protective tube material

stainless steel

on inquiry

Insert length L_1

on inquiry 10 ... 40 mm

Type of compensating cable

on inquiry

Cable length L_2

on inquiry min. 100 mm

Bend protection

without

with spiral spring

Thread

M6

M8

M10

G1/4A

on inquiry

Connector

free ends

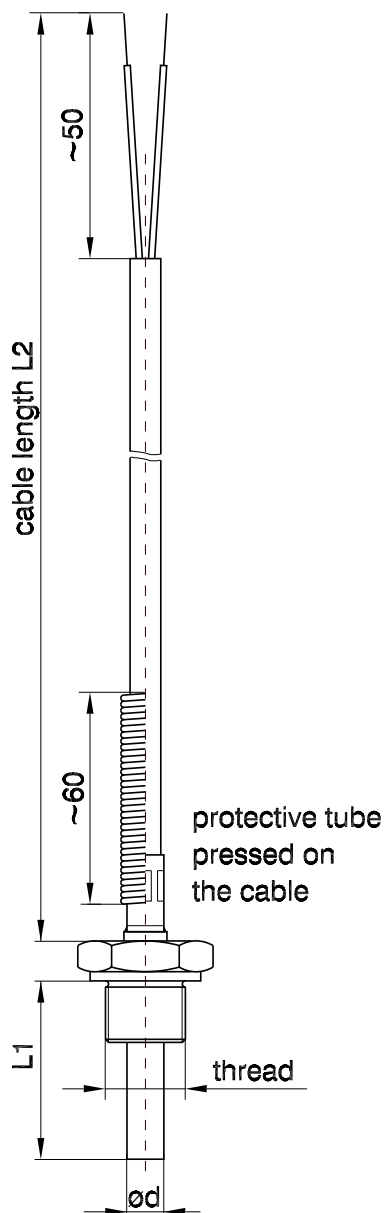
connector on inquiry

declare desired temperature range for case of application

Thermocouples

Cable sensors

Series K5T



Application temperature

on inquiry, dependent on sensor and protective tube material

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

2 thermocouples

Measuring point design

insulated of protective tube

connected to protective tube

disconnected bead at 2 thermocouples

connected bead at 2 thermocouples

Protective tube material

1.4571

on inquiry

Protective tube diameter d

on inquiry 3 ... 6 mm

Insert length L_1

on inquiry min. length of thread + 10 ... 1000 mm

Type of compensating cable

on inquiry

Cable length L_2

on inquiry min. 100 mm

Bend protection

without

with spiral spring

Thread

M10

G1/4A

G1/2A

on inquiry

Thermocouples
Cable sensors
Series K5T

Connector

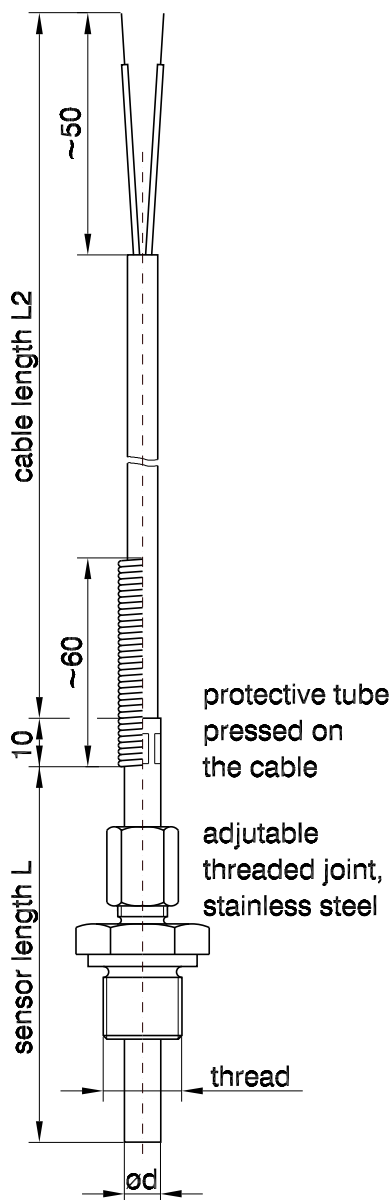
free ends
connector on inquiry

declare desired temperature range for case of application

Thermocouples

Cable sensors

Series K6T



Application temperature

on inquiry, dependent on sensor and protective tube material

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Protective tube material

1.4571
on inquiry

Protective tube diameter d

on inquiry 3 ... 10 mm

Sensor length L

on inquiry (length of screwing +10 ... 1000 mm)

Type of compensating cable

on inquiry

Cable length L₂

on inquiry min. 100 mm

Bend protection

without
with spiral spring

Locking ring in the screw connection

teflon clamp ring
metal clamp ring

Thread

on inquiry M8x1 ... G1/2A

Connector

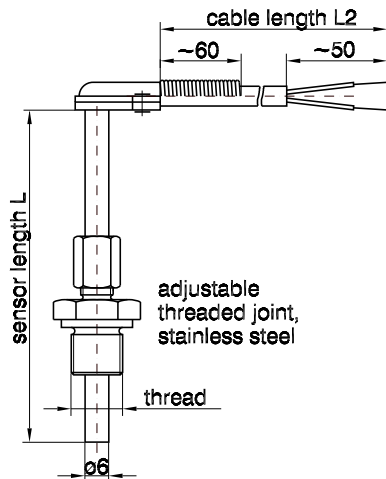
free ends
connector on inquiry

declare desired temperature range for case of application

Thermocouples

Cable sensors

Series K7T



Application temperature

on inquiry, dependent on sensor and protective tube material

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

Number of Thermo junction

1 thermocouple

2 thermocouples

Protective tube material

1.4571

on inquiry

Protective tube diameter d

6 mm

on inquiry

Sensor length L

on inquiry (length of screwing +10 ... 1000 mm)

Type of compensating cable

on inquiry

Cable length L₂

on inquiry min. 100 mm

Bend protection

without

with spiral spring

Thread

M10x1

G1/4A

G1/2A

on inquiry

Connector

free ends

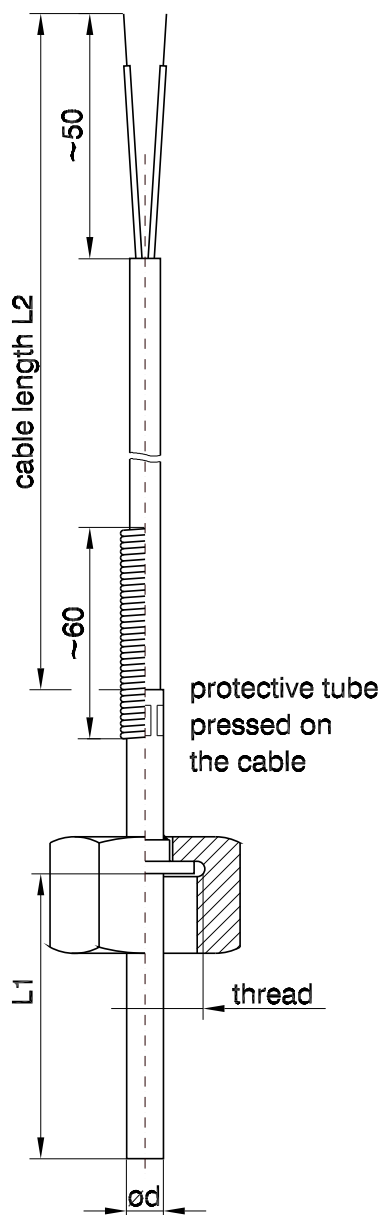
connector on inquiry

declare desired temperature range for case of application

Thermocouples

Cable sensors

Series K8T



Application temperature

on inquiry, dependent on sensor and protective tube material

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Protective tube material

1.4571
on inquiry

Protective tube diameter d

on inquiry 3 ... 10 mm

Insert length L_1

on inquiry min. length of thread + 10 ... 1000 mm

Type of compensating cable

on inquiry

Cable length L_2

on inquiry min. 100 mm

Bend protection

without
with spiral spring

Thread

M10x1
G1/2A
on inquiry

Connector

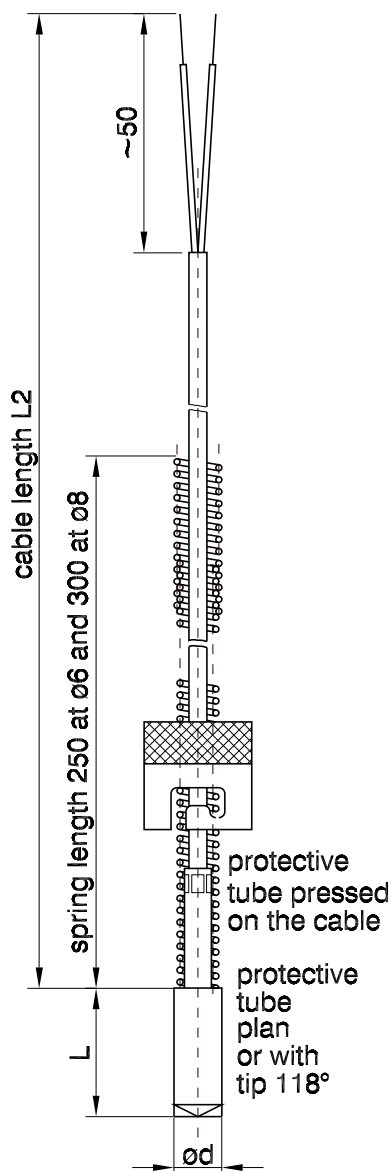
free ends
connector on inquiry

declare desired temperature range for case of application

Thermocouples

Cable sensors

Series K9T



Application temperature

on inquiry, dependent on sensor and protective tube material

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

2 thermocouples

Protective tube form

planar

pointed 118°

Protective tube material

1.4305

on inquiry

Protective tube diameter d

6 mm

8 mm

on inquiry

Sensor length L

on inquiry 10 ... 30 mm

Type of compensating cable

on inquiry

Cable length L₂

on inquiry min. 100 mm

Construction of bajonett cap

for thread nipple (bayonet matching part) \varnothing 12

for thread nipple (bayonet matching part) \varnothing 14

Connector

free ends

connector on inquiry

Thread nipple

none

on inquiry

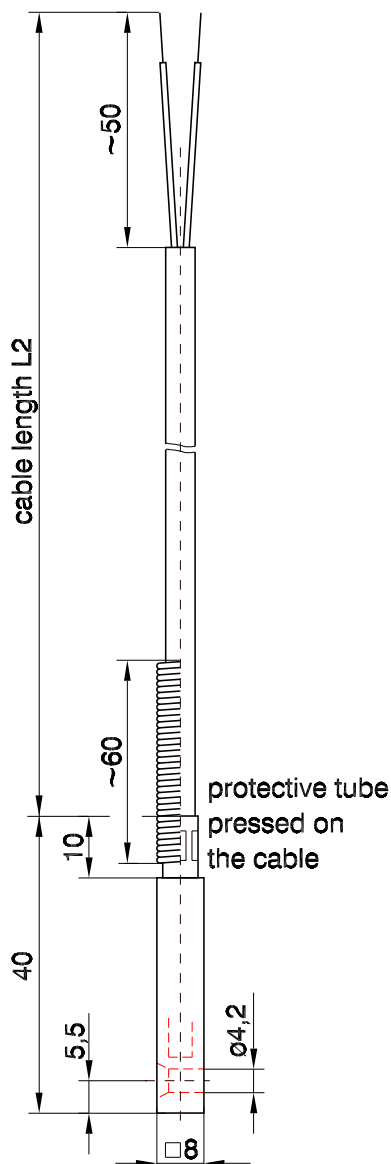
Thermocouples
Cable sensors
Series K9T

declare desired temperature range for case of application

Thermocouples

Cable sensors

Series K10T



Application temperature

on inquiry, dependent on sensor and protective tube material

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

2 thermocouples

Protective tube material

aluminium

stainless steel

Brass

on inquiry

Type of compensating cable

on inquiry

Cable length L_2

on inquiry min. 100 mm

Bend protection

without

with spiral spring

Connector

free ends

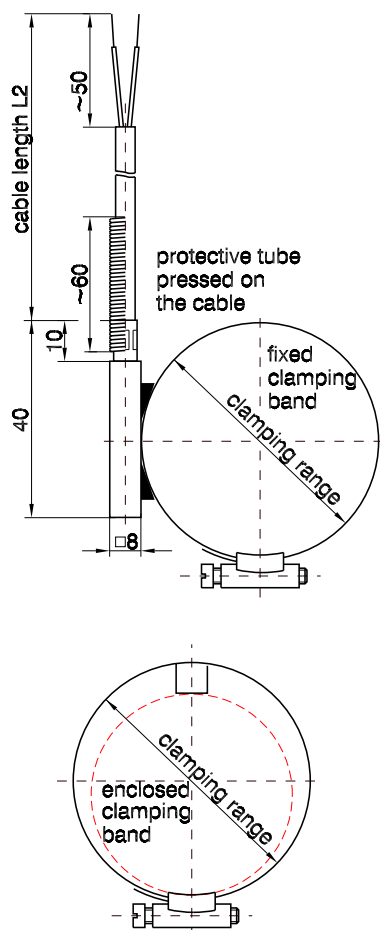
connector on inquiry

declare desired temperature range for case of application

Thermocouples

Cable sensors

Series K11T



Application temperature

on inquiry, dependent on sensor and protective tube material

Thermo junction

J (Fe-CuNi) DIN EN 60584

K (NiCr-Ni) DIN EN 60584

on inquiry

Number of Thermo junction

1 thermocouple

2 thermocouples

Protective tube material

stainless steel

Brass

on inquiry

Type of compensating cable

on inquiry

Cable length L_2

on inquiry min. 100 mm

Clamping band

fixed

enclosed

Clamping range

20 - 32 mm

32 - 50 mm

50 - 70 mm

70 - 90 mm

90 - 100 mm

on inquiry

Bend protection

without

with spiral spring

Connector

free ends

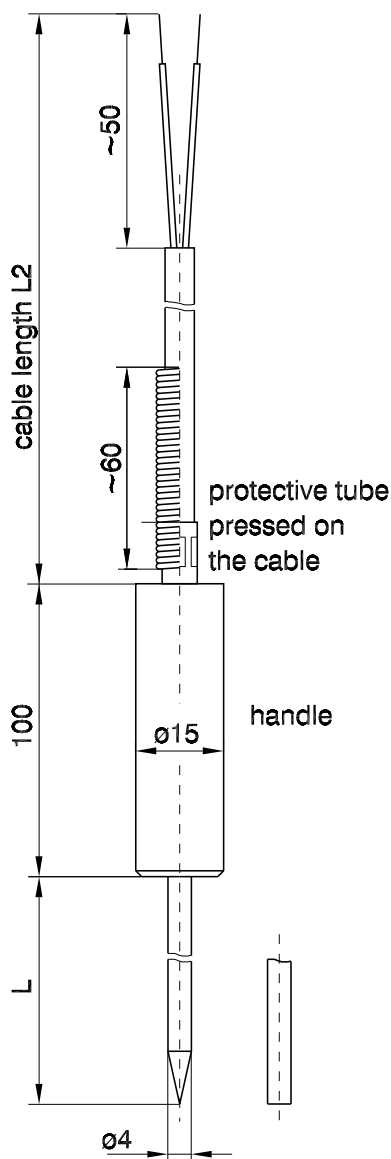
connector on inquiry

declare desired temperature range for case of application

Thermocouples

Cable sensors

Series K12T



Application temperature

on inquiry, dependent on sensor and protective tube material

Thermo junction

J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
on inquiry

Number of Thermo junction

1 thermocouple
2 thermocouples

Handle material

stainless steel
PTFE (Teflon, max. 260°C)

Protective tube form

planar
with penetration point

Protective tube material

stainless steel
on inquiry

Protective tube diameter d

4 mm
on inquiry

Sensor length L

on inquiry 20 ... 190 mm

Type of compensating cable

on inquiry

Cable length L₂

on inquiry min. 100 mm

Bend protection

without
with spiral spring

Connector

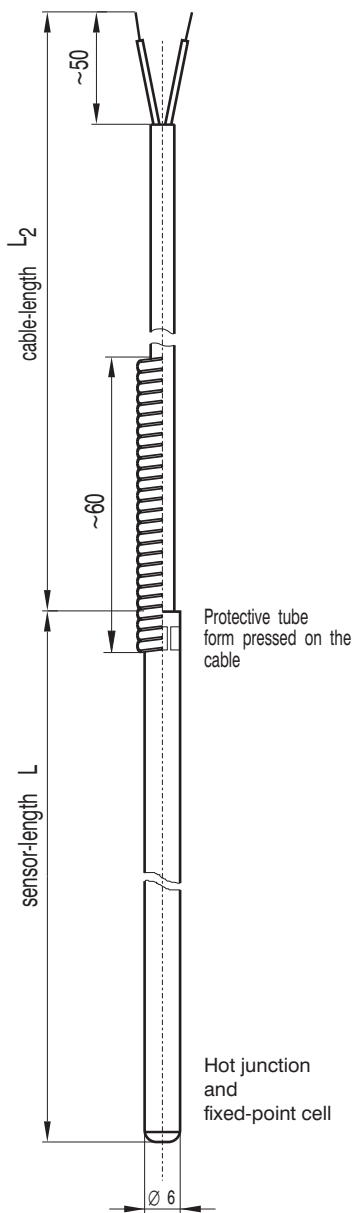
free ends
connector on inquiry

declare desired temperature range for case of application

Thermocouples

Cable sensors

Series FP-KTE



Applications

Thermocouple with high stability fixed-point cell; the fixed-point substance forces a typical signal during its melting and freezing (fixed-point plateau); calibration curve deviations of the whole measuring circuit will be recognisable and could be corrected

Thermo junction

L (Fe-CuNi) DIN 43 710
J (Fe-CuNi) DIN EN 60584
K (NiCr-Ni) DIN EN 60584
N (NiCrSi-NiAl) DIN EN 60584
S (PtRh10-Pt) DIN EN 60584
B (PtRh30-PtRh6) DIN EN 60584

Number of Thermo junction

1 thermocouple

Fixed point material

Bi33In67 72,5 °C
In 156,59 °C
Sn 231,93 °C
Zn 419,53 °C
Al67Cu33 548,2 °C
Al87Si13 578,8 °C
Al 660,32 °C
Ag28Cu72 779,6 °C

Measuring point design

insulated, integrated in fixed point cell

Protective tube material

1.4571
on inquiry

Protective tube diameter d

6 mm
on inquiry

Sensor length L

on inquiry 50 ... 1000 mm

Thermocouples
Cable sensors
Series FP-KTE

Compensating cable length L₂

on inquiry

Type of compensating cable

on inquiry

Bend protection

without
with spiral spring

Connector

free ends
connector on inquiry